

Appl. No. : 10/733,896
Filed : November 26, 2003

REMARKS

The May 31, 2006 Office Action was based on pending Claims 1-7, 9-13, 15-17, 19-29, 32-40, 42-50 and 52-54. By this Response, Applicant is amending Claims 1, 9, 11, 21, 34 and 45 and is cancelling Claims 17, 32 and 54 without prejudice or disclaimer. Claims 2-7, 10, 12, 13, 15, 16, 19, 20, 22-29, 33, 35-40, 42-44, 46-50, 52 and 53 remain as originally filed or as previously presented.

Thus, after entry of the foregoing amendments, Claims 1-7, 9-13, 15, 16, 19-29, 33-40, 42-50, 52 and 53 are pending and presented for further consideration. In view of the foregoing amendments and the remarks set forth below, Applicant respectfully submits that Claims 1-7, 9-13, 15, 16, 19-29, 33-40, 42-50, 52 and 53 are in condition for allowance.

SUMMARY OF OBJECTIONS AND REJECTIONS

The May 31, 2006 Office Action rejected Claims 21, 32-34, 42, 45 and 53 under 35 U.S.C. § 102(b) as being unpatentable over U.S. Patent No. 5,222,225 to Groves ("Groves").

Claims 1, 7, 8, 9, 11, 17, 19, 20, 24, 25, 36, 37 and 52 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Groves in view of U.S. Patent No. 4,920,483 to Pogue ("Pogue"). Claims 2, 3, 12, 13, 22, 23, 35, 43, 44, 46-48 and 54 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Groves in view of Pogue and in further view of U.S. Patent No. 5,060,143 to Lee ("Lee").

Claims 4-6, 14-16, 28, 29, 39, 40, 49 and 50 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Groves in view of Pogue and in further view of U.S. Patent No. 5,900,012 to Tran ("Tran"). Furthermore, Claims 10, 26 and 38 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Groves in view of Pogue and in further view of U.S. Patent No. 5,404,473 to Papworth et al. ("Papworth"). Claim 27 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Groves in view of Papworth.

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Submitted concurrently herewith is a Supplemental Information Disclosure Statement citing seven (7) references, some of which were cited during the prosecution of co-pending related U.S. patent applications. While Applicant does not believe that these references will affect the patentability of the pending claims, Applicant respectfully requests the Examiner to consider the pending claims in connection with these references in order to make them of record.

CLAIM REJECTIONS UNDER 35 U.S.C. § 102(b)

The Office Action rejected Claims 21, 33, 34, 42, 45 and 53 as being anticipated by Groves. In view of the foregoing amendments and for at least the reasons set forth below, Applicant respectfully disagrees and requests reconsideration of the aforementioned claims.

Amended Independent Claim 34

Amended independent Claim 34 recites a processor comprising a data cache coupled to a string execution unit having an instruction decoder configured to decode string manipulation instructions. The processor further includes, among other things, a second execution unit and an instruction module configured to forward string manipulation instructions to the string execution unit and non-string manipulation instructions to the second execution unit. The processor also includes a cache line shifter coupled to the data cache so as to shift a first cache line of data cache a selected number of bytes.

Groves does not disclose the processor of amended independent Claim 34. Rather, Groves appears to be directed to an apparatus for manipulating a contiguous variable length sequence of data. In particular, with reference to Figure 1, the apparatus of Groves includes an instruction decode unit (10) that decodes a string operation instruction and provides command signals to control logic (14). The control logic (14), in turn, operates a byte rotator (22), a register (26) and byte merge logic (30) (see, e.g., col. 3, lines 50–59). The byte rotator (22) and byte merge logic (30) move

word data stored in a memory (20) such that the first portion of the data is aligned with a word boundary (see, e.g., col. 2, lines 22–43).

The apparatus of Groves does not have a string execution unit comprising its own decoder configured to decode string manipulations instructions. As described above, the Groves apparatus appears to include a single instruction decoder (10) that decodes all instructions and provides command signals to control logic (14) for operating various components of the apparatus. Although the May 31, 2006 Office Action labels Groves' byte merge logic (30) and byte rotator (22) collectively as a "string execution means," neither the byte merge logic (30) nor the rotator (22) includes its own decoder for decoding string manipulation instructions.

Furthermore, and alternatively, the apparatus of Groves does not have an instruction module that forwards string manipulation instructions to a string execution unit and non-string manipulation instructions to a second execution unit. That is, Groves does not disclose a module that differentiates between types of instructions (i.e., string manipulation instructions and non-string manipulation instructions) and forwards the instructions to an appropriate execution unit based on the differentiation. Rather, all the instructions in Groves appear to be decoded by the instruction decoder (10).

Because Groves does not disclose each and every element of amended independent Claim 34, Applicant asserts that Claim 34 is not anticipated by Groves, and Applicant respectfully requests allowance of Claim 34.

Independent Claims 21 and 45

Independent Claims 21 and 45 are believed to be patentably distinguished over the cited art for reasons similar to those set forth with respect to the patentability of amended independent Claim 34 and for the different aspects recited therein.

Dependent Claims 33, 42 and 53

Claim 33 depends from amended independent Claim 21 and is believed to be patentably distinguished over Groves for the reasons set forth above with respect to Claim 21 and for the additional features recited therein.

Claim 42 depends from amended independent Claim 34 and is believed to be patentably distinguished over Groves for the reasons set forth above with respect to Claim 34 and for the additional features recited therein.

Claim 53 depends from amended independent Claim 45 and is believed to be patentably distinguished over Groves for the reasons set forth above with respect to Claim 45 and for the additional features recited therein.

CLAIM REJECTIONS UNDER 35 U.S.C. § 103(a)

Claims 1, 7, 8, 9, 11, 17, 19, 20, 24, 25, 36, 37 and 52 were rejected as being unpatentable over Groves in view Pogue. Claims 2, 3, 12, 13, 22, 23, 35, 43, 44, 46–48 and 54 were rejected as being unpatentable over Groves in view of Pogue and Lee. In addition, Claims 4–6, 14–16, 28, 29, 39, 40, 49 and 50 were rejected as being unpatentable over Groves in view of Pogue and Tran. Claims 10, 26 and 38 were rejected as being unpatentable over Groves in view of Pogue and Papworth. Claim 27 was rejected as being unpatentable over Groves in view of Papworth.

In view of the foregoing amendments and for at least the reasons set forth below, Applicant respectfully disagrees and requests reconsideration of the aforementioned claims.

Amended Independent Claims 1, 11 and 54

Amended independent Claims 1, 11 and 54 are believed to be patentably distinguished over the cited art for reasons similar to those set forth with respect to the patentability of amended independent Claim 34 and for the different aspects recited therein.

For instance, none of the cited references, or a combination thereof, teaches or suggests: (i) a string execution unit having its own decoder for decoding string manipulations instructions and (ii) an instruction module that forwards string manipulation instructions to the string execution unit and non-string manipulation instructions to a second execution unit.

Dependent Claims 2-7, 9, 10, 12, 13, 15, 16, 19, 20, 22-29, 32, 33, 35-40, 42-44, 46-50, 52, 53

Claims 2-7, 9 and 10 depend from amended independent Claim 1 and are believed to be patentably distinguished over the cited art for the reasons set forth above with respect to Claim 1 and for the additional features recited therein.

Claims 12, 13, 15, 16, 19 and 20 depend from amended independent Claim 11 and are believed to be patentably distinguished over the cited art for the reasons set forth above with respect to Claim 11 and for the additional features recited therein. For example, with respect to Claim 19, Applicant was unable to find any teaching or suggestion in Groves and/or Pogue of a string execution unit and a general execution unit capable of independently and alternatively controlling a memory controller.

Claims 22-29, 32 and 33 depend from amended independent Claim 21 and are believed to be patentably distinguished over the cited art for the reasons set forth above with respect to Claim 21 and for the additional features recited therein.

Claims 35-40 and 42-44 depend from amended independent Claim 34 and are believed to be patentably distinguished over the cited art for the reasons set forth above with respect to Claim 34 and for the additional features recited therein.

Claims 46-50, 52 and 53 depend from amended independent Claim 45 and are believed to be patentably distinguished over the cited art for the reasons set forth above with respect to Claim 45 and for the additional features recited therein.

CONCLUSION

In view of the foregoing, the present application is believed to be in condition for allowance, and such allowance is respectfully requested. If further issues remain, the Examiner is cordially invited to contact the undersigned such that the issues may be promptly resolved.

Moreover, by the foregoing amendments and remarks no admission is made that any of the above-cited references are properly combinable. Rather, Applicant submits that even if the references are combined, the references still do not teach or suggest the claimed invention.

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Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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